WATER QUALITY TEAM MEETING NOTES

May 13, 2003
National Marine Fisheries Service Offices
Portland, Oregon

1.Introductions and Review of the Agenda.

Mark Schneider of NMFS, WQT co-chair, welcomed everyone to the meeting, held May 13 at the National Marine Fisheries Service's offices in Portland, Oregon. The meeting was facilitated by Robin Harkless. The meeting agenda and a list of attendees are attached as Enclosures A and B. Please note that some of the enclosures referenced in these meeting notes may be too lengthy to routinely attach to the minutes; please contact Kathy Ceballos (503/230-5420) to obtain copies.

2. Introduction of Jim Adams.

Schneider introduced Jim Adams, the Corps of Engineers' new Reservoir Control Center/Portland District water quality coordinator. Mr. Adams will be replacing Dick Cassidy, who retired earlier this year. Schneider went briefly through Mr. Adams' previous experience and qualifications for this position; Adams then spent a few minutes describing his priorities.

3. Water Temperature Modeling and Data Collection for the Lower Snake River Basin.

Rick Emmert led this presentation, noting that the draft report from the WQT's Lower Snake River water temperature subgroup is now available. Working from a series of slides, Emmert and Joe Carroll touched on the following major topic areas:

- Current status (draft plan released April 29)
- Remaining efforts -- complete biological appendix (mid-July), address Team comments on draft report, complete final report, make final recommendations to the WQT.
- Plan overview – the RPA 143 technical team is recommending using the CEQUAL-W2 model for this effort; it is a two-dimensional, non-proprietary model with a long history of successful similar applications. The model is supported by the Corps' ERDC; it handles other water quality parameters in addition to temperature, under medium run times.
- Lower Snake temperature study objectives (characterize thermal patterns in the Lower Snake River system during the 2002 summer and fall period, provide guidance on future sampling requirements, determine the fate and effects of releases from Dworshak Dam

on the Lower Snake system etc.)
- Lower Snake temperature study: sample design
- Average daily flows and percent total flows from various USGS sites along the Snake and Clearwater Rivers, April '02-November '02 (graph)
- Lower Snake River project discharge and theoretical retention time by project and the entire lower river, December '02-January '03 (graph)
- Lower Granite tailwater (LGNW) and forebay (LWG) fixed monitor temperatures, with total project and spillbay discharge, April-November 2002 (graph)
- Tailwater fixed monitoring temperature data for the Lower Snake River projects plus water temperatures for LEWI and ANQW (graph)
- Temperature profile time histories for Dworshak forebay station (DWKFB), June-November 2002 (graph)
- Temperature profile time histories for Lower Granite forebay station, June-November 2002 (graph)

Carroll then provided the following conclusions from the Lower Snake temperature study:

- Annual vertical thermal gradient in Dworshak is 12-14 degrees C from the surface to 60 m, resulting in large volumes of deeper waters at 4-6 degrees C
- Release of cold waters into the North Fork of the Clearwater can result in rapid and significant changes in the Lower Clearwater River temperatures depending on the ratio of the warmer Middle Fork Clearwater River to that from the North Fork
- The resulting change in Lower Granite forebay water temperature is more subtle/dampened and highly dependent on the ratios of Middle Snake and Clearwater River water, total discharge (travel time) and weather conditions
- Annual thermal cycles are consistent for all of the study area sampling stations. Spring warming trends start in the March timeframe with most stations' temperatures (both in-pool and in-river) peaking out in late July followed by fall cooling. Maximum temperatures were observed a few weeks earlier in Dworshak pool. Daily solar warming results in significant diel temperature cycles as well as lasting general warming on most riverine reaches on both the Middle Snake and Clearwater Rivers.
- Characterization of Lower Snake River thermal patterns
- Evaluation/representativeness of fixed water quality monitors
- Data collection strategy – high priority, water temperature (routine long-term sampling, special research sampling, Lower Granite study), water discharge/project operation (routine long-term sampling, special close-interval sampling), meteorological, database operation
- Data collection strategy – low-priority (bathymetry data, flow field/water velocity, thermal imagery analysis
- Data collection strategy (long-term) – high-priority water temperature routine sampling (continue water quality monitoring at each project tailwater and forebay with the following recommendations: water temperature monitoring year-'round at all stations; relocate forebay monitor upstream of project to avoid downwelling/upwelling associated with vertical walls on project face, replace point monitoring approach with a profiling

approach using a temperature string capable of real-time operation)

- Data collection strategy 2003-'04: high-priority water temperature research sampling (continue vertical and longitudinal thermal monitoring in the Lower Snake River from spring through fall period)
- Data collection strategy – water discharge/project operation (high priority: (continue close interval project operations data, continue routine COE operations data collection)
- Data collection strategy – long-term, high-priority meteorological data (continue current stations, parameters to include air temperature, barometric pressure, wind speed and direction, solar radiation, precipitation; establish short-term micro-meteorological sites)
- Data collection strategy – 2003-'04 database operations (high priority): (water temperature, project operations data, weather data, bathymetry data, velocity/flow field information)
- Data collection strategy – low-priority (bathymetry data, flow field/water velocity, thermal imagery analysis)

Please note that the full text of the Emmert/Carroll presentation is attached as Enclosure C; please refer to this document for details.

Whose job is it to get Idaho Power's attention about the importance of the temperature regime of its Hells Canyon Complex releases to temperatures at Lower Granite, in the context of its FERC relicensing process? Joyce Cohen asked. That's a question that goes beyond the scope of this subgroup, Schneider replied; it more of a question for the states. That's a discussion I'll be following with great interest, said Cohen, because how Idaho Power operates Hells Canyon has a profound effect on Lower Snake water temperatures in Oregon as well as Idaho.

In response to a question, Emmert said the final subgroup report is expected to be out in August; we hope to wrap up the entire project by the end of the fiscal year, he said. That would be the latest, Schneider added – if we can move the process forward more quickly, we will do so.

Is the overall purpose of the model to help us better predict how operational decisions will affect temperature? another participant asked. We should be able to use the model to look ahead to some degree, yes, Carroll replied, although it is also intended to have applications in the habitat realm. But will we be able to use your model to make predictions about how best to operate the system, in terms of water releases and project operations? Adams asked. Yes, Carroll replied, although there are going to be some challenges in making this a real-time tool. It will be useable in day-to-day operations – that was one of our goals for the model, another subgroup participant replied. For example, if there was a cold front coming through, it might be possible to use the model to save some of the cold water from Dworshak for use later in the season, he added.

4. Washington Department of Ecology Columbia/Snake River Temperature TMDL Monitoring Strategies.

Mike Herold of WDOE provided a brief overview of the current status of the

Columbia/Snake temperature TMDL monitoring strategies; he noted that a number of unique technical issues have come up in the course of this discussion. The TMDL compliance is based on whether the mainstem dams meet their site potential for temperature, which is based on a 30-year average of modeled river conditions if the dams were not there, and if they were. Site potential is a surrogate of the natural conditions that would prevail if the dams were not there, Herold explained. An extreme example for Grand Coulee is that, on some days of the year, water temperatures would be 6 degrees lower if the dam was not there, Herold said. Basically what we're trying to capture here is the temperature shift that occurs with the dams in place, he explained.

At this point, it is still uncertain whether these site potential limits will be in place for two months, six months or longer, Herold said. The TMDL site potentials are based on what it would take to meet those conditions throughout the system, he said; all of the dams have to contribute to meeting those site potentials. Because this is an extremely complex calculation, Herold said, some have suggested that we use other alternative means to assess compliance, rather than site potential. One technical question is, does it really take 30 years of data to determine compliance? he added.

Was there any discussion of incorporating the global warming data into the TMDL? Carroll asked. We discussed it extensively, but couldn't see how that added value to the TMDL process, Herold replied -- anyway, that's the Delta T vs. site potential question.

So if the site potential measure is falling out of favor, we need a way to determine whether a given dam is achieving its temperature reduction potential, Herold said. Some dams, particularly Grand Coulee, will need to be able show how they're attempting to comply, he said. There is the potential for some of this to change, in terms of the way projects can demonstrate that they are not raising temperatures over natural background levels, depending on what we hear back from D.C., he added.

Herold said WDOE would welcome any input the WQT might have on these technical questions. It would be helpful if you could provide us a brief written description of the questions you would like the WQT to answer, Schneider said; Herold agreed to provide a written summary of the comments he has received on this issue to Schneider. It sounds as though, in general, the jury is still out on whether site potential should be used as a measure of TMDL compliance, Carroll said. That's correct, Herold replied; it may be that Delta T is a more workable measure.

Herold added that "pollution trading" has been brought up as a measure that potentially has some merit in this TMDL; the question is, what unit of bartering should be used. I'll provide more information on this topic as it becomes available, he said. We'll leave this as a placeholder for a future meeting, on an as-needed basis, said Harkless.

5. Mainstem Water Quality Plan Work Group Update.

Jim Ruff reminded the WQT that a work group has been meeting to develop a Mainstem Water Quality Plan for the past several months, an action required under Appendix B of the 2000

BiOp. We have had good state, federal, PUD and tribal participation in this work group, he said; the Corps is taking the lead on this project. Ruff complemented Paul Ocker of the Corps on his work in this arena.

A draft plan detailing all water quality improvements and operations at all of the mainstem and important tributary dams has now been completed; this is not a true plan, however, in the sense that it has not prioritized these water quality actions or laid out a schedule for their implementation – that's the next step, said Ruff. We're hopeful that, when it is complete, the Mainstem Water Quality Plan will be very useful to the states' TMDL process, he said. There is some question about what the next steps for this plan should be, he said; it is a living document that will need to be updated as new information comes in. Who will do that is one of the questions we're facing, Ruff said. We have a meeting scheduled for tomorrow, he said; our goal for that meeting is to identify the top 10 actions for both gas and temperature, and to reach consensus on what those priorities should be.

With respect to the WQT's role in the mainstem water quality planning process, we would certainly like your input on the technical aspects of the plan; that review may be coming your way within the next month or so, Ruff said. He noted that the draft Plan is available from the Corps Walla Walla District homepage. In response to a question, Ruff said the WQT may also have a role to play in providing technical guidance to Water Quality Planning Group's prioritization process, with respect, for example, to the cost and technical feasibility of some of the actions under consideration.

6. Chief Joseph/Grand Coulee Spill/Generation Swap Update.

Schneider said he had presented the WQT's recommendations on the Chief Joseph/Grand Coulee Spill/Generation swap to both the TMT and the IT; the TMT agreed to incorporate the WQT's recommendations into their 2003 Spill Management Plan. What that says, of course, is that, under certain conditions, Grand Coulee and Chief Joseph will be operated to maximize generation at Grand Coulee, with spill taking place at Chief Joseph, he said. Schneider added that Congress has approved funding for the Corps to begin the design of Chief Joseph flow deflectors; if all goes well, from a funding standpoint, those deflectors will be operational within two years.

7. Next WQT Meeting Date.

The next meeting of the Water Quality Team was set for Tuesday, June 9, although this meeting may be deferred until July, depending on what does or does not come out of the Mainstem Water Quality Planning Group. Meeting summary prepared by Jeff Kuechle, BPA contractor.